

### **REMARKS**

Claims 1-21 are presently pending in the application. Claim 19 has been amended to include a claim number, since the claim number was inadvertently omitted in the previous amendment. New claims 20 and 21 have been added, and recite cold cathode lamps where the getter material comprises an yttrium and aluminum alloy containing at least 70% by weight of yttrium and an yttrium and vanadium alloy containing at least 70% by weight of yttrium, respectively. Support for claims 20 and 21 can be found, for example, at page 7, third full paragraph of the specification as filed. No new matter has been added. Entry of the present Amendment is respectfully solicited.

Claim 19 is objected to for not having a claim number. A current version of the claims is provided above, and claim 19 is numbered as such. Accordingly, reconsideration and withdrawal of the objection to claim 19 is respectfully solicited.

Claims 1-19 are rejected under 34 U.S.C. § 103(a) as unpatentable (obvious) over U.S. Patent Application Publication No. 2003/0090202 (Gallitognotta) in view of U.S. Patent No. 5,961,750 (Boffito). Regarding claim 1, the Examiner alleges that Gallitognotta discloses a cathode (11) comprising a metallic bearing part (12) at least partially coated with a layer of getter material (21). The Examiner acknowledges that Gallitognotta does not specifically disclose the alloys recited in claim 1, and relies on Boffito for this teaching. Specifically, the Examiner alleges that Boffito discloses a cathode for cold cathode lamps at least partially coated with a layer of getter material including alloys which fall within the recitation of claim 1. The Examiner concludes that it would have been obvious to utilize the alloys disclosed in Boffito in the device disclosed in Gallitognotta in order to minimize the environmental and safety risks associated with known nonevaporable getter alloys. The Examiner alleges that Gallitognotta in view of Boffito discloses or makes obvious the features of claims 2-19. Applicants respectfully but strenuously traverse the rejection of claims 1-19 for the reasons set forth below.

Boffito discloses at column 3, lines 24-42 that getter devices can be obtained with the disclosed alloys. Cold cathode lamps are not disclosed at column 3 of Boffito, nor is the coating of cathodes of cold cathode lamps with the disclosed alloys. Additionally, Boffito does not

disclose or suggest that the alloys disclosed therein have the features of lowering the work function value of a cold cathode lamp. Accordingly, it would not have been obvious to use the alloys disclosed in Boffito in the cathode disclosed in Gallitognotta.

Furthermore, a skilled artisan faced with the problem of reducing the work function value of a cold cathode lamp would not know that this problem could be solved by selecting a particular getter alloy for coating the cathodes. Additionally, the skilled artisan would have been faced with a huge number of possible materials without any guidance as to which alloys would address the issue. Thus, it would not have been obvious to modify Gallitognotta with the alloys disclosed in Boffito.

The Examiner concludes at page 3, lines 14-15 of the Office Action that it would have been obvious to use the alloys disclosed in Boffito in the cathode disclosed in Gallitognotta “for the purpose of minimizing the environmental and safety risks associated with known nonevaporable getters.” However, this alleged advantage is not correlated to the technical problem of reducing the work function value. The Examiner appears to take the position that any advantage of any getter alloy is sufficient reason to select such getter alloy for use in the cathode disclosed in Gallitognotta. However, many known getter alloys have advantageous features, such as alloys having a high pumping velocity, alloys having a high capacity, materials capable of reversibly sorbing specific species (molecular sieves), getter alloys that are selective or inactive towards specific species such as the getter alloys for removing impurities, etc.

The Examiner’s position would result in it being *prima facie* obvious to use any known getter alloy in the cathode of Gallitognotta as long as such known getter alloy has any conceivable advantageous characteristic. This is contrary to established legal precedent, since the Federal Circuit has made it clear that reliance on *per se* rules of obviousness is legally incorrect. *See In re Ochiai*, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995). The Examiner has not provided a reason for one of ordinary skill in the art to have utilized the specific getter alloys disclosed in Boffito specifically in the cathode disclosed in Gallitognotta, as opposed to some other getter alloy. Accordingly, *prima facie* obviousness has not been demonstrated.

Additionally, the disclosure in Boffito regarding safety and the environment is either directed to vanadium or is not applicable to the uses disclosed in Gallitognotta. At column 2, lines 33-35, Boffito discloses that the St 707<sup>TM</sup> alloy “has the drawback of containing vanadium, the compounds of which are toxic, particularly the oxides.” The toxicity problems disclosed in Boffito stem from the use of vanadium. However, nearly all of the getter materials disclosed in Gallitognotta do not include vanadium, so one of ordinary skill in the art would not have needed to look to Boffito to improve toxicity.

Also, at column 2, lines 39-53, Boffito discloses that safety issues can arise for workers when some getter alloys are contacted with large amounts of reactive gases, resulting in melting of stainless steel vessels due to the formation of a eutectic composition between the getter material and the vessel wall. This is clearly not applicable to cold cathode lamps, which are not the same as the steel vessels disclosed in Boffito. Also, the Examiner has not provided any evidence that the getter materials disclosed in Gallitognotta are otherwise less safe than the getter materials disclosed in Boffito. Thus, *prima facie* obviousness has not been demonstrated to use the getter materials disclosed in Boffito on the cathode disclosed in Gallitognotta.

In sum, it is Applicants’ position that the Examiner is improperly using hindsight to arrive at the claimed invention. The Examiner has not identified any need in the invention of Gallitognotta (whether disclosed or not) for the getter materials disclosed in Boffito. Moreover, the Examiner has not identified any material advantages of the getter materials disclosed in Boffito over those of Gallitognotta, or disclosed elsewhere. As such, it is Applicants’ position that claim 1 is patentable over Gallitognotta in view of Boffito.

In view of the above, reconsideration and withdrawal of the rejection of claim 1 over Gallitognotta in view of Boffito are respectfully solicited. Claims 2-19 depend from claim 1 and are patentable for at least the same reasons as claim 1. Reconsideration and withdrawal of the rejection of claims 2-19 are respectfully solicited.

Regarding claim 15, the Examiner acknowledges that Gallitognotta in view of Boffito does not specifically disclose the alloy being an aluminum and yttrium alloy with at least 70% yttrium. The Examiner, however, contends that Gallitognotta discloses both aluminum and

yttrium as candidates for the getter material at paragraphs [0005] and [0016], that it would have been obvious as a matter of choice to select aluminum and yttrium alloys, and that it would have been obvious to include at least 70% yttrium as a matter of routine optimization.

Applicants respectfully disagree. The disclosure of aluminum at paragraph [0005] of Gallitognotta is as part of a zirconium-aluminum alloy. The disclosure of aluminum at paragraph [0016] of Gallitognotta is as part of a zirconium or titanium alloy. The Examiner has not identified any disclosure in Gallitognotta for the use of aluminum with any alloy that is not an alloy based on zirconium or titanium. Accordingly, there is no disclosure or suggestion of an yttrium-aluminum alloy that is 70% or more yttrium. Moreover, the disclosure of yttrium at paragraph [0016] of Gallitognotta is a reference to a single element, not an alloy. Accordingly, there is no disclosure of an yttrium based alloy in Gallitognotta, especially an yttrium and aluminum alloy.

Additionally, the Examiner has not shown that the amount of yttrium in an yttrium-aluminum alloy is a result-effective variable. The Court of Customs and Patent Appeals has explained that the discovery of an optimum value of a variable is not obvious if the parameter optimized is not recognized to be a result-effective variable. *See In re Antonie*, 195 USPQ 6, 8-9 (CCPA 1977) (emphasis added). Thus, it would not have been automatically obvious to prepare an yttrium-aluminum alloy having at least 70% yttrium, and the Examiner has not provided any reason to have modified Gallitognotta to result in such an yttrium-aluminum alloy.

In view of the above, claim 15 is further patentable over the cited art for the above reasons. Claim 20 is patentable over the cited art for at least the above-described reasons regarding claim 15.

Regarding claim 16, the Examiner acknowledges that Gallitognotta in view of Boffito does not specifically disclose an alloy containing at least 70% by weight yttrium, but contends that it would have been obvious to include at least 70% yttrium as a matter of routine optimization. As stated above, the reference to yttrium at paragraph [0016] of Gallitognotta is a reference to a single element, not an alloy. The same is true of the reference to vanadium. Accordingly, there is no disclosure or suggestion in Gallitognotta of an alloy which includes both

yttrium and vanadium. Moreover, Boffito specifically discloses at column 2, lines 33-35 that there are toxicity issues with including vanadium as a getter material, and therefore teaches away from using an alloy of yttrium and vanadium in Gallitognotta.

Additionally, the Examiner has not shown that the amount of yttrium in an yttrium-vanadium alloy is a result-effective variable. The Court of Customs and Patent Appeals has explained that the discovery of an optimum value of a variable is not obvious if the parameter optimized is not recognized to be a result-effective variable. *See In re Antonie*, 195 USPQ 6, 8-9 (CCPA 1977) (emphasis added). Thus, it would not have been automatically obvious to prepare an yttrium-vanadium alloy having at least 70% yttrium, and the Examiner has not provided any reason to have modified Gallitognotta to result in such an yttrium-vanadium alloy.

In view of the above, claim 16 is further patentable over the cited art for the above reasons. Claim 21 is patentable over the cited art for at least the above-described reasons regarding claim 16.

**CONCLUSION**

In view of the foregoing Amendment, Applicants respectfully submit that the claims are in proper form, and in view of the foregoing Remarks, Applicants respectfully submit that the claims distinguish over the cited art. Therefore, the present application is in condition for allowance. Reconsideration and an early Notice of Allowance are respectfully requested.

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